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ABSTRACT

A study was conducted to determine what alterations, additions, and improvements in older homes make them more desirable to the consumer. After a review of the literature, a questionnaire was developed and sent to fifty-five homeowners in Ames, Iowa, who had had major additions or renovations done by contractors during the previous five years. Data from the 35 returned questionnaires (64 percent) was analyzed and the following conclusions were drawn: (1) homeowners had taken steps to reduce energy consumption; (2) persons who believed that their home was located in a desirable residential area were more likely to invest greater resources; (3) updating of mechanical systems (plumbing and electrical) and patios, sundecks, and recreation facilities are viewed as features which have resale appeal; (4) new paint, carpeting, plumbing, roofing, and drapes are the most frequent improvements made to older homes; (5) added bath, living and recreation rooms, and sundecks were the most prevalent additions in major renovations. Recommendations for future study include examining the social status of occupants who improve older homes, cost of such projects and expected rate of return on investment; expanding survey to other areas for comparison; starting research on the possibility of carrying out an extensive home renovation project; and repeating the study in five years. (KC)

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ED197068

HOME IMPROVEMENT RESEARCH PROJECT

By:

Dr. William D. Wolansky

Mr. Benedict Ogwezi

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Ames, Iowa
November 30, 1980

CE 027 514

INTRODUCTION

This research project was initiated to determine the nature and extent of renovations made to older single-family homes in the Ames community. It was designed to serve as a pilot research model which would provide useful information to contractors, buyers, sellers, and realtors.

More important, the energy use and energy conservation measures incorporated into improvement projects benefit the entire community and this type of information needs to be diffused to appropriate and interested groups. Energy conservation consciousness was evidenced by residents in the majority of home improvement projects.

While this research has provided a status report of home improvements in the Ames community during the past five years, it is necessary to expand and repeat this study to determine persistent patterns over prolonged periods.

The economic, energy, and dwindling land resources are contributing to an increasing interest in revitalizing older homes in desirable locations.

Financial support from Triplett Real Estate and the Research Institute for Secondary Education, College of Education at Iowa State University, made it possible to carry out this research.

HOME IMPROVEMENT RESEARCH PROJECT

In a recent article, Diamond International (1980) report, the question was raised, "Why the boom in home improvements?" Three answers were provided. First, they're a good investment, an inflation hedge. Second, over 40 million homes in America are now 25 years old or older--and need help. Third, high mortgage rates often favor repairing or expanding present homes rather than building or buying new ones.

Another reason is that there is a current emphasis on neighborhood revitalization, a major component of the nation's efforts to reclaim its older, urban areas. Residential areas in large metropolitan cities have always been subjected to some degree of improvement, perhaps with less emphasis on expansion. The extent of improvements in recent years may be due to several factors: the continuous decline of desirable building sites within the urban boundaries, the rising costs of energy, the availability of more consumer knowledge regarding home purchases, the potential that many older homes have for improvement and expansion, the interest in living in well established neighborhoods, and the possibility of assuming lower mortgage rates from previous home owners. Obviously, there are many justifications for enlarging, modifying and improving older homes and thus extending their continued utilization, comfort and energy efficiency. Improving old homes not only provides sustained taxes for the community but also reduces the overall cost of housing as inflation and high interest rates greatly spiral the cost of new homes.

As cited by E.A. Chamberlain (1972), "The idea of the detached single family house on a private lot has its greatest expression in America

and is in a close race with the automobile as the major force compelling our economic system" (p. 105).

Most persons view their housing investment as a hedge against inflation. As Chamberlain observed, "Repeated research indicates that construction costs are not the high item in home building cycles, but rather the money costs are the real problem" (p. 106). If a person retains the major portion of the house and obtains a loan for a small portion, it is possible to create the added space and convenience as well as to increase the overall value and efficiency of the dwelling.

Another factor is the growing scarcity and cost of land and services in urban centers. Enlarging homes, where necessary, on a parcel of residential land is sound economic and environmental practice. Our social attitude towards a house or housing is that it is a goal to be achieved, a reward, in fact, for productivity or business accomplishment. This belief is more eloquently stated by Chamberlain (p. 105).

> A house is a strongly held social goal and as such is strongly promoted by our communications media. General success and social status are measured by the house one is able to acquire and maintain.

It is not unusual to see individuals enlarge their house out of necessity but also as a perceived reward of achievement, not to ignore the importance of a sound financial investment.

The increasing costs of energy will encourage many individuals to improve the thermal efficiency of their homes which were built during the period of abundant low-cost energy. The high cost of transportation also

caused by the high cost of energy will also tempt more individuals to improve their housing in the core of the cities rather than to purchase new homes in outlying suburbs.

The higher cost of land and non-availability of desirable building lots will also likely stimulate more upgrading of homes in the older neighborhoods.

One observation perhaps is most central in terms of explaining the revitalization of older homes in urban centers. Boynton (ed) (1979, p. 11) included this statement, "As growing scarcities drive up the cost of resources needed to develop new urban settlements, the value of much of the existing capital stock in cities will increase."

Added investment in an existing house which continues to increase in value makes good economic practice, and moreover, any improvements will undoubtedly contribute to the conservation and preservation of our community resources.

The Problem

This study focused on the identification of what alterations, additions, and improvements in older homes made them more desirable to the consumer. Discussion related to the problem centers around two major areas: What changes were made to older homes, and which changes were made most often?

Specific Objectives

1. To survey the occupants of improved homes regarding: a) energy use and b) conservation practices.
2. To determine what improvement features were made and were perceived

to have buyer appeal or resale benefit.

3. To determine what alterations, enlargements, and conversions were made most frequently to the older homes.

4. To determine what factors contributed to the predisposition to improve an older home.

5. To determine the approximate added value of improved older homes.

Methodology

The methodology employed in this research included a review of literature and previous research related to this topic. As a result of the review, an instrument was developed to collect data regarding minor, moderate, and major improvements that were made to single-family homes in Ames, Iowa. The major categories of home improvements were identified as follows:

1. Replacement and maintenance
2. Alterations and enlargements
3. Additions and renovations
4. Improvements other than building
5. Conversions
6. Energy conservation

An expansion of these categories is found in Appendix C.

The survey instrument was submitted to the Human Subjects Committee of the Graduate College and permission was obtained to mail the instruments to selected residents in Ames.

Population

The population for this study included those residents of Ames who occupied a house which had home improvements made to it within the past five years (1975-1979).

Sample

The local builders and contractors of residential home construction were contacted to determine names of home owners for whom remodeling, alterations, or additions were made during the 1975-79 period. Fifty-five names were submitted by the contractors to the researchers.

The instrument was mailed to a sample of 55 residents. It should be noted that the sample did not include residents who did their own improvements. Costs of labor and other overhead costs would not be easily determined in such projects. Also, it should be noted that with the mobility of Ames residents, the present owner who completed the questionnaire may have occupied a residence which underwent improvements prior to the purchase.

As a result, 35 or 64 percent completed returns were available for data collection and analysis.

Analysis

The information from the returned questionnaires was tabulated and item summary distributions were expressed in percentage form.

Findings and Discussion

Objective 1. a) Energy Use

It should be noted that 99.8% of the respondents owned, occupied

and preferred to live in a single-family house. This indicates that major home improvements are made by persons who own their own home. The notion of owning a single-family home in the United States is verified as one of the social goals of achievement.

Energy use to heat the homes was distributed as follows:

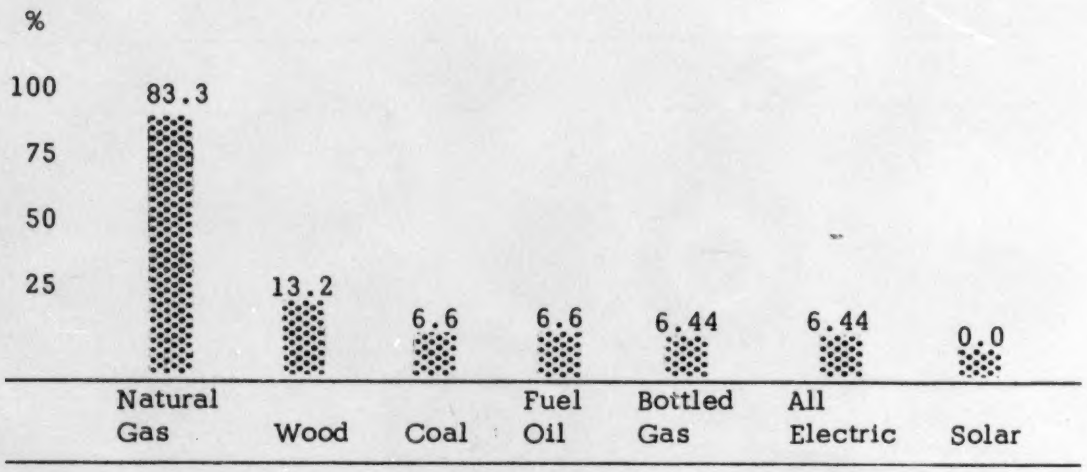

Figure 1.1 Main Sources of Home Heat

It is obvious that recently improved homes continue to include a high dependence (83.3%) on the fossil fuel of natural gas as the main source of heat fuel. Interestingly, all other sources such as wood and coal continue to be used in older homes whereas solar energy is not being adapted to the older homes. It should be noted that the percentages may exceed 100% since several respondents employed complementary energy sources.

Energy use in the home for water heating was distributed as follows:

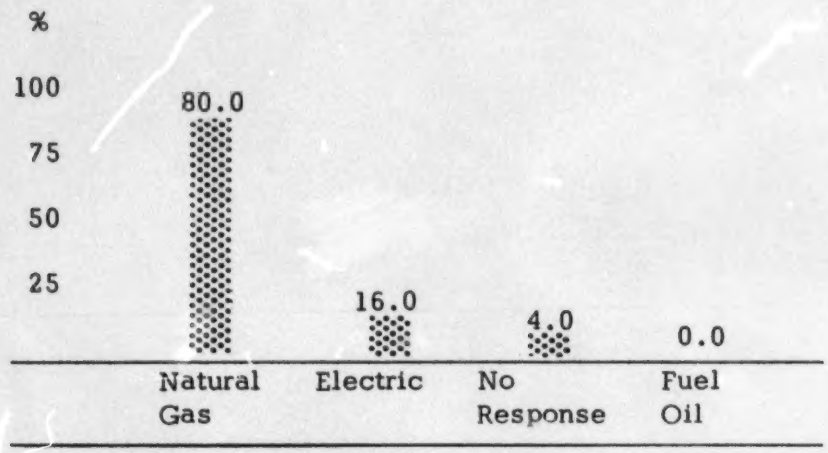

Figure 1.2 Sources of Water Heating

There is a high dependence (80%) on the use of natural gas for heating water in recently improved homes in Ames. Perhaps the use of a common fuel for home heat and water heating systems reduces alternate sources of energy.

Since energy use in homes includes heating and cooling, air conditioning in improved homes was also examined in this survey. The following information was gleaned from the survey. A very high percentage (93.3) of the home owners had central air conditioners. Controlled temperature appears to be a high and common priority in the improved older homes.

The annual costs of operating and maintaining the air conditioners were also ascertained.

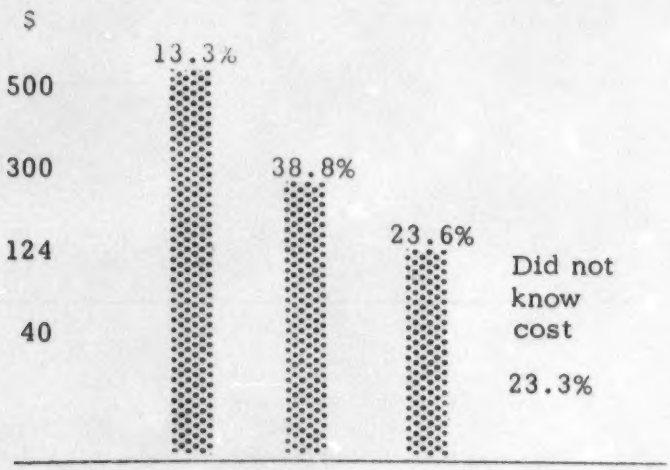

Figure 1.3 Annual Operating and Maintenance Costs of Air Conditioning

Operation and maintenance costs of central air conditioners in 52% of the improved homes exceeded $125. It is interesting to note that almost one in four home owners was not aware of what this cost was in their home budget.

Objective 1. b) Conservation Practices

Actions to conserve energy have taken on a number of forms.

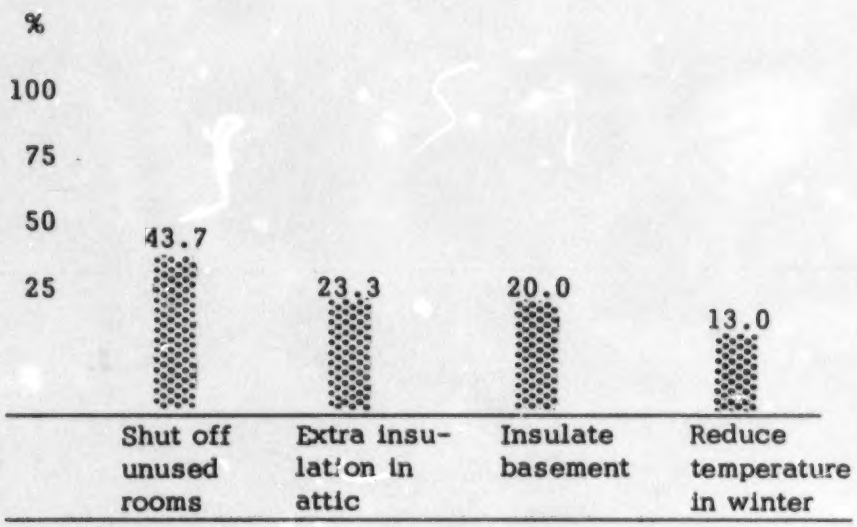

Figure 1.4 Common Conservation Techniques

While improved homes tend to create more space in terms of living room, recreation room and bathroom, there is evidence that unused parts of the house are shut off from temperature control for parts of the year. The use of added insulation in attics and basements are other improvements made to create more energy efficient homes. The age of modified homes was not determined and it may be possible that some of the homes had adequate insulation.

Reducing the temperature levels both in heating and cooling reflects energy conservation consciousness.

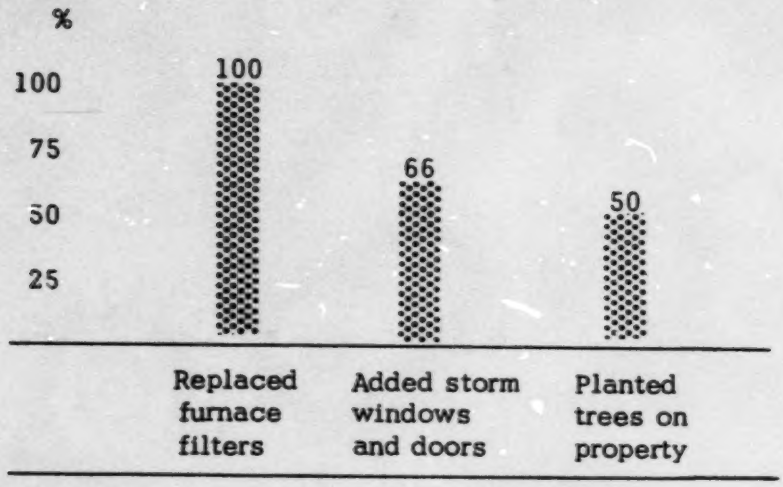

Figure 1.5 Other Energy Conservation Techniques

Home owners invariably attend more to replacing filters in furnaces and air conditioners to reduce temperature control inefficiency. The consciousness of energy conservation and use of low cost replacement of filters signifies a desire by home owners to reduce inefficiencies. The majority (66%) of the home improvements included storm windows and doors to reduce radiant heat and cool air loses. Storm windows and doors have year-round utility.

It is interesting to note that home owners view the planting of trees not only as landscape improvement measures but as energy conservation measures. In a relatively short time, there has been a heightened awareness of the need to conserve energy and the alternate techniques that can be applied to improve the ome for increased energy efficiency and utility.

Objective 2. Improvement Features Perceived to have Buyer or Resale Appeal

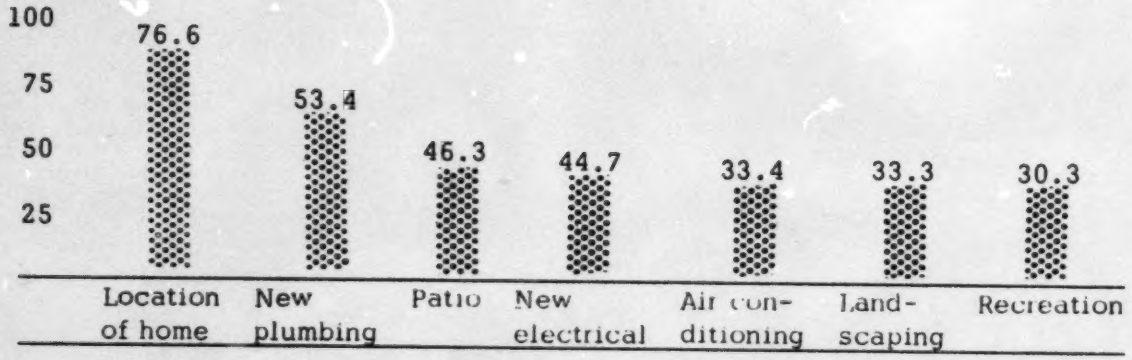

Figure 2.1 Buyer or Resale Appeal Features

It is obvious that the location of a home is perceived as an important factor in terms of resale appeal. A home in a desirable location may well justify improvement in terms of potential recovery of a given investment. New plumbing was viewed as a sound investment by more than fifty percent of the sample. At today's plumbing costs, it is an apparent selling feature where old plumbing was replaced.

Because of the increased emphasis on outdoor living, the patio was considered also as having resale appeal. With today's energy costs, people travel less to visit parks; therefore the patio compensates for the outdoor lifestyle.

New electrical systems were also viewed as a favorable investment with sound recovery potential. Other items included air conditioning, landscaping, and addition of a recreation room. Having an additional bath

(26.3%), a fenced yard (26.3%), and a sundeck (23.3%) were also considered as contributing features to the resalability of a home.

All of the features included represent relatively large investments; however, these are also the features that represent buyer and resale appeal. One should be reminded that these features were identified for single-family homes. These may not be the same features in duplexes or other multiple-family housing.

Objective 3. Most frequent Improvements, Alterations and Enlargements and Conversions Made to Existing Homes

Objective 3. a) Improvements in terms of replacement and maintenance were made according to the following distributions:

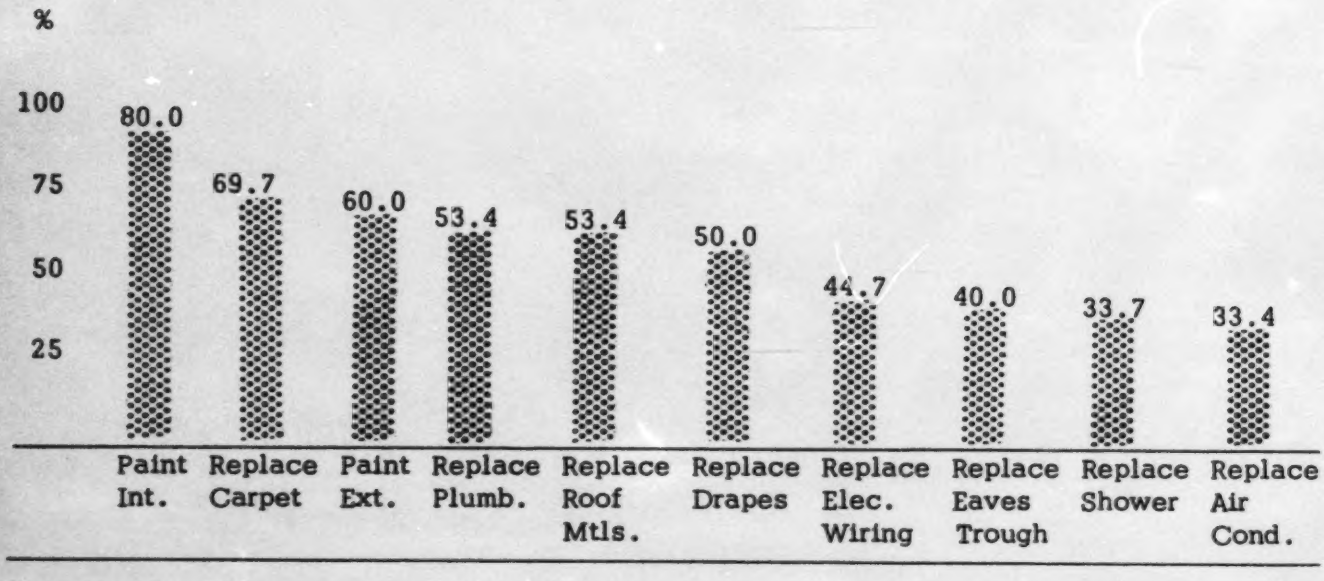

Figure 3.1 Frequency of Improvements

The incidence of general maintenance was the highest for interior painting followed by painting the exterior, whereas the incidence for replacement was the highest for carpeting, plumbing and roofing materials. It may be that the hail damage in recent years in Ames created an abnormal rate of

replacing roofing materials.

The replacement of electrical wiring may be in part the result of increasing home appliances such as deep freezers, hair dryers, clothes dryers, etc. It is interesting to note that furnaces were not replaced in recent improvements. Improved materials for eaves troughing and shower stalls may have contributed to the replacement of older units.

There is an apparent need for improvements to keep older homes in desirable repair, appearance, and convenience. Perhaps the neglect of interior and exterior paint and replacement of carpeting would serve as the primary indicators of inadequate improvements.

Objective 3. b) Frequency of alterations and enlargements

A wide range of alterations and enlargements were made to the homes according to this survey.

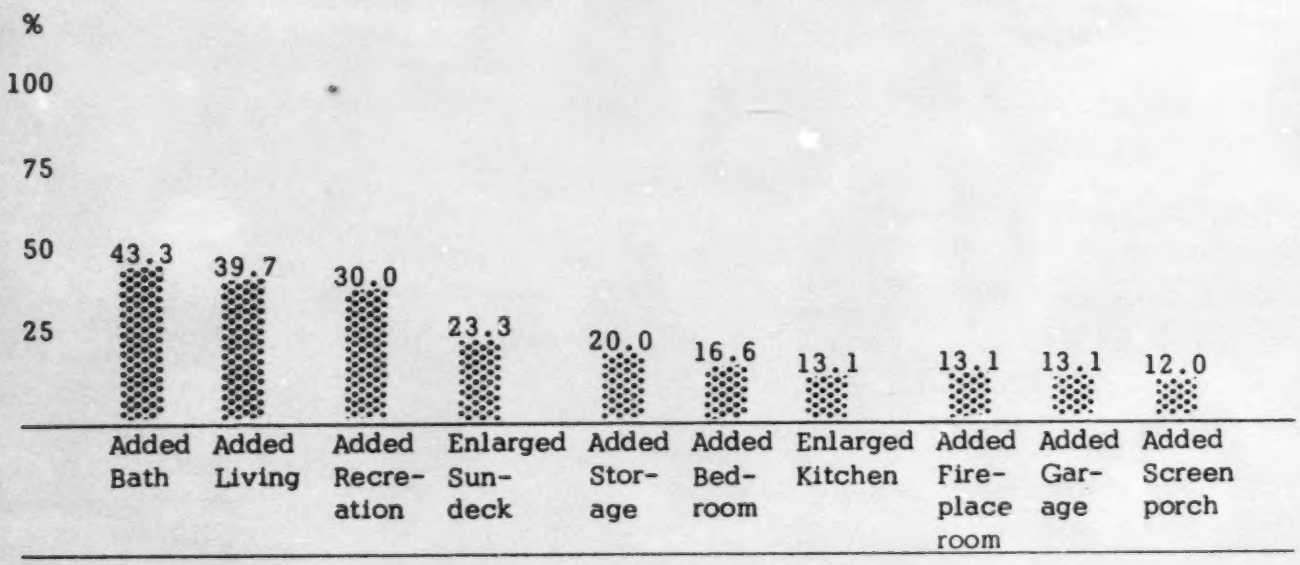

Figure 3.2 Frequency of additions and Enlargement of Spaces

The addition of a bath (43.3%) was the most frequent alteration made in home improvements. A full range of rooms was included with varying frequency. The addition of a living room, recreation room, and sundeck were also more prevalent than other needed spaces in older homes.

Several other additions were reported in the survey. These included more storage space, added fireplace, and garage.

Therefore, older homes which had recent additions such as a bathroom, dining room, garage or enlarged kitchen would have greater utility and appeal to families seeking older homes.

Objective 3. c) Conversions

One of the findings which was not anticipated was the limited conversion of space to new or different uses. Two types of conversions were reported. A former garage was converted to living space (3.3%) and an attic was converted to bedrooms (2.0%). Perhaps the items needed more explanation and the low percentage may be the result of the ambiguous meaning implied by the items.

Objective 4. Major Factors Contributing to Predisposition to Improve Older Homes

Why would a family go through the inconvenience of living in a home where major renovations, additions, or conversions were made?

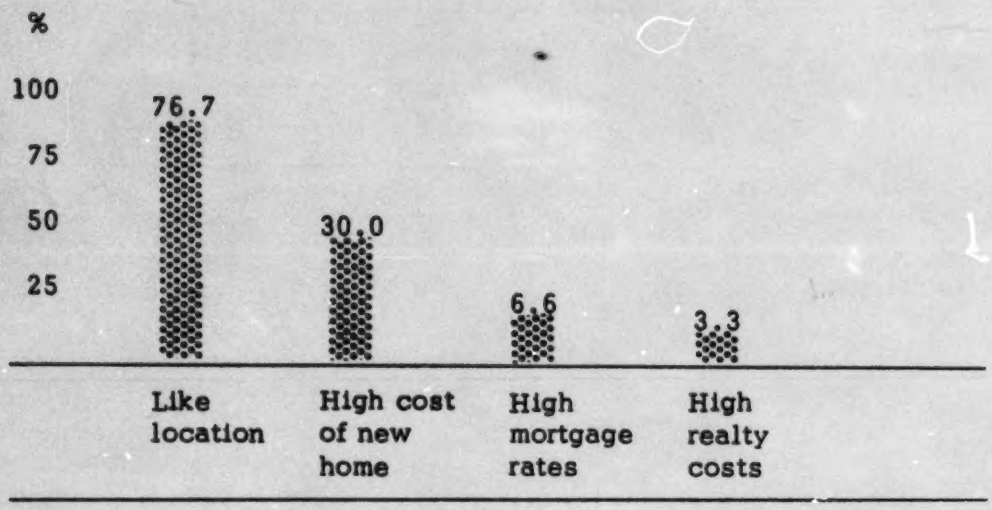

Figure 4.1 Factors Facilitating Home Improvements

It is abundantly clear that the major factor which predisposes home owners to invest sizable sums into the improvement of their home is the location.

Individuals who like and enjoy the location of their home are more likely to keep it in repair and enlarge it with changing times. The high cost of money was not a deterrent in Ames at the time (Spring, 1979) of this study from making major improvements to their older homes. The cost of new homes served as a deterrent for 30% of the home owners from purchasing a new home in preference to improving their existing home. As prices of new homes continue to rise, it may be anticipated that more older homes will be improved to meet the changing lifestyles of home owners.

Objective 5. Added Value of Improved Older Homes

A related question to a home owner's willingness to improve an existing home was the amount expended in the process of making these improvements.

Costs of Major Renovations

Range of Expenditures:	$1,000-$ 4,000	= 20.0%
	$4,000-$ 9,000	= 30.0%
	$10,000-$20,000	= 20.0%
	$20,000-or more	= 6.7%

What is interesting is that the major renovations have likely exceeded the cost of the initial structure. Approximately one half of the major renovations were under $10,000. Again it should be noted that the home improvements included in this study were those done by contractors. No estimates were ascertained as to the cost per square foot for renovated space.

If this sample is representative of the major renovations made to older homes in Ames, it is likely that older homes will not only gain in terms of inflationary value, but the improvements will create greater valuation and residential capacity for Ames.

While the approximate added value to the 55 older homes which had major improvements was estimated to exceed $550,000, many other benefits accrue to the community. Better utilization of land, utilities and transportation are realized by revitalizing older homes in the core area of most aging cities. Providing employment, sale of building products, and conserving energy

are some additional benefits of home improvement.

Conclusions

The data and findings of this study indicated that most renovated homes continued to rely on natural gas for central heating; however, steps were taken to reduce energy consumption by shutting off unused rooms, adding insulation, and maintaining lower temperatures in winter while tolerating higher temperatures in summer.

Persons who believed that their home was located in a desirable residential area are more likely to invest greater resources with the anticipation of good opportunity for resale.

Updating of mechanical systems (plumbing and electrical) and patios, sundecks and recreation facilities are viewed as features which have resale appeal. New paint, carpeting, plumbing, roofing and drapes are the most frequent improvements made to older homes.

Added bath, living and recreation rooms and sundecks were the most prevalent additions in major renovations. Additions of patios, sundecks, barbeque pits and landscaping suggest that greater utilization of outdoor space is being made in present day lifestyles than was practiced formerly. High cost of energy and transportation may have contributed to this shift in outdoor lifestyle.

Recommendations

It is recommended that a more refined instrument be developed to examine the social strata of occupants who occupy the older homes and

initiate major improvement projects, the actual mean cost per square foot for major projects, and the expected rate of return on the investment.

It is recommended that this survey be expanded to sampling other urban renewal centers for comparison purposes of costs and benefits.

It is recommended that research be undertaken to work on a major renovation of an older home with greater attention to energy conversion and conservation possibilities.

It is recommended that this study with refined instrumentation be repeated in 1985 to observe any noticeable changes or patterns.

Acknowledgements

The authors are indebted to Mr. Dudley Triplett, who co-sponsored this survey research effort with the Research Institute for Secondary Education, College of Education at Iowa State University. Funding from both co-sponsors made it possible to employ a graduate assistant to develop the data collection instrument and tabulate the data.

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Appendix A

Iowa State University of Science and Technology Ames, Iowa 50011

College of Education
Industrial Education
Telephone 515-294-1033

Dear Home Owner:

Recently we began to conduct research regarding the types of home improvements, alterations, and major remodeling home owners in Ames and in this vicinity are making to older homes. Our research is directed to obtaining information about the type and extent of improvements being made to older homes.

The high cost of mortgage rates, cost of new construction, real estate, and the current interest in up-grading well built older homes is changing the role of the construction industry.

Would you please take several minutes to complete and return this questionnaire to us. Anonymity is assured. We will not use any names as to the sources of our data.

Sincerely,

William D. Wolansky
Professor and Head
Department of Industrial Education

WDW:hw

Appendix B

Iowa State University of Science and Technology Ames, Iowa 50011

College of Education
Industrial Education
Telephone 515-294-1033

HOME IMPROVEMENTS INFORMATION PROJECT

This is a survey conducted by the Department of Industrial Education at Iowa State University, Ames, Iowa.

WE NEED YOUR HELP!

We hope you will be willing to spend a few minutes of your time in answering this survey. Confidentiality will be maintained as there will be no descriptions tied to individual responses.

OUR OBJECTIVE!

Our objective is to learn what kind of improvements people are making to their homes and what people consider to be good investments in terms of maintaining or improving their residence.

Your response to this survey will help us learn how people in and near Ames are attempting to improve our energy situation through home improvements.

We want to know your opinions, what you have done (or what you want to do) about your homes in replacement and maintenance , alterations and enlargements, additions and renovations, conversions, and energy efficiency improvements.

PLEASE RETURN YOUR COMPLETED QUESTIONNAIRE TO:

Dr. William D. Wolansky
"Attention" Benedict C. Ogwezi
Department of Industrial Education
114 Industrial Education Building II
Iowa State University
Ames, Iowa 50011

YOUR HOME IMPROVEMENTS

1. Replacement and Maintenance

Please check yes if you have, or no if you have not carried out any home improvements on the items identified below within the last five years.

	Yes	No	
a)	___	___	Air conditioner(s) have been replaced.
b)	___	___	Carpet at home has been replaced.
c)	___	___	Drapes at home have been replaced.
d)	___	___	New shower has been installed.
e)	___	___	Roofing material has been replaced.
f)	___	___	Interior of home repainted (partial or complete).
g)	___	___	Exterior of home repainted.
h)	___	___	Eavestroughing replaced.
i)	___	___	New electrical wiring installed.
j)	___	___	Plumbing system replaced or maintained.

2. Alterations and Enlargements

Home improvements have received considerable attention for the last four years partially as a result of the high mortgage rate and as a response to the energy conservation problem. Please check the items below to indicate the alterations/enlargements which have been carried out in your home. Check (✓) the items which you altered or enlarged.

a) ___ Bathroom

b) ___ Bedroom

c) ___ Dining room

d) ___ Kitchen

e) ___ Living room

f) ___ Recreation room

g) ___ Screened porch

h) ___ Sundeck

i) ___ Storage space

j) ___ Garage

k) ___ Other (please specify) _____

3. Additions in Existing Home

Please check yes/no as to whether you have added the following items to your home within the past four years.

	Yes	No	
a)	___	___	Bathroom or more
b)	___	___	Bedroom
c)	___	___	Dining room
d)	___	___	Fireplace
e)	___	___	Kitchen
f)	___	___	Living room
g)	___	___	Recreation room
h)	___	___	Screened porch
i)	___	___	Storage space
j)	___	___	Sundeck
k)	___	___	Hobbies workshop
l)	___	___	Garage
m)	___	___	Study
n)	___	___	Home office
o)	___	___	Other (please specify) _____

4. If you have made a major renovation in your property, the approximate cost was:

a) ____ $1,000 - $4,000

b) ____ $4,000 - $9,000

c) ____ $10,000 - $20,000

d) ____ $20,000 and above

5. Why as a consumer were you willing to make a major investment in your home rather than to buy a new home with the features which you have added to your existing home?

a) ____ Like my location

b) ____ High mortgage rate

c) ____ High cost of new house

d) ____ High realty fees

e) ____ Other (please specify) _____

6. Other than building improvements, please indicate any or all the items which you have carried out on your property.

Major project(s) other than building improvements:

a) ____ Barbeque pit

b) ____ Fenced yard

c) ____ Patio

d) ____ Landscaping

e) ____ Surfaced driveway

f) ____ Swimming pool

g) ____ Sprinkler system (garden)

h) ____ Other (please specify) _____

7. Conversions

Do you plan to improve your home by adding any or all of the following items within the next four years? Check those you intend to do in the next four years.

a) ____ Convert garage to living space.

b) ____ Convert attic to bedrooms or other living space.

c) ____ Other (please specify) _____

Have you converted any or all of the following items to improve your home within the last four years? Please indicate all that apply.

a) ____ Converted garage to living space.

b) ____ Converted attic to bedrooms or other living space.

c) ____ Other (please specify) _____

THANK YOU VERY MUCH!

Please mail the questionnaire in the stamped envelope provided. If you are interested in the abstract of findings, please fill the information below.

( ) I am interested.

My address is: _____
(Name)

_____
(Street)

_____
(Town) (State) (Zip)

Appendix C

HOME IMPROVEMENT INFORMATION PROJECT

Directions: Please respond to the following questions. Circle one response for each item.

YOUR ENERGY USE

1. What type of home do you live?

   a) single family house
   b) townhouse, duplex
   c) apartment
   d) mobile home
   e) other (please describe) _____

2. Which fuel is your main source of home heat?

   a) natural gas
   b) bottled gas
   c) fuel oil
   d) all electric
   e) other (please describe) _____

3. Which type of water heater do you have?

   a) natural gas
   b) bottled gas
   c) fuel oil
   d) electric
   e) solar
   f) other (please describe) _____

4. Have your furnace filters been replaced or cleaned in the past one year?

   a) yes
   b) no
   c) do not remember
   d) do not have one

5. Do you have a home air conditioner?

   a) yes, if yes, it is:
      1. central air
      2. individual room
      3. how many? _____
   b) no

6. Approximately how much does it cost you per year for central air conditioning your home? (Include maintenance costs.)

   a) $2 - $39
   b) $40 - $124
   c) $125 - $299
   d) $300 - $500
   e) not sure

7. Since the 1973 Arab oil embargo, which if any of the following did you do in your home to conserve energy?

a) added extra insulation in the attic.
b) added extra insulation to the basement.
c) removed the insulation in the attic and replaced with recent energy saving insulation.
d) shut off heat to unused rooms.
e) other (please identify) _____

8. Which of the following fuels is being used as the source of heat for your home? (Circle the numbers of all that apply)

a) natural gas
b) bottled gas
c) fuel oil
d) solar
e) electricity
f) coal
g) wood

9. Which of the following forms of energy do you think should have the highest priority for research to overcome our immediate problem with energy supply?

a) nuclear
b) coal
c) solar
d) gasohol
e) other (please identify) _____

10. In your opinion, solar energy will probably be the most practical energy source for:

a) hot water system
b) suppiemental central heat
c) exclusive central heat

11. Here are two home energy saving practices. Please place a number 1 next to the one you have done, a 2 next to the one you intend to do.

a) _____ added storm windows and doors
b) _____ intend to add storm windows and doors
c) _____ planted trees on the property
d) _____ intend to plant trees on the property.

12. In the interest of energy efficiency, are there any other home improvements you consider which we have omitted?

_____